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of each part is a Bibliography of works cited, and an inspection of these lists at once indicates the labor entered upon by the author, as well as that saved to those who have now the benefit of his research.

PHILADELPHIA.

CHARLES PLATT.

Nitrogen and Water, or the Water Atoms and Their Relations. Part—The Earth's Atmosphere, by WILLIAM COUTIE.

The author of this polygraph of 31 pages is good enough to assure us that some things remain undiscovered, or at any rate we infer this to be his meaning. To discover the real meaning of many of his sentences would require the application of the calculus, since his thoughts soar off into space in what are apparently curved lines. It is probable that minds of the earth, earthy, like that driving this pen, are incapable of fully grasping the mighty thoughts here set forth. They are certainly startling and go to the root of all things.

It appears that we have all been mistaken in our conception of the design of Creation, at least those who have ventured to form any such conception have been mistaken. The real reason is thus set forth:

"It is evident that it is the law of change that gives the Creator some work to do and something that is new in all time. It is thus to Him the most important of all, for it is to Him preëminently omnipresent, universal and in all things forever new, and without it time would be a monotony and a burden, almost everything would be old and He would have nothing to do."

The following whack at our biological brethren is commended to their attention; their disgraceful Darwinian tendencies make it deserved, if somewhat severe:

"If we now turn to the results in time we find that, first, horse in our knowledge was of the size of a fox and walked on his heels. Now all horses of every kind walk on the point of their longest toe, and they are all many times the weight of a fox. Now, why did all horses get on their toes at the same time, or how did they get on the tips of their toes at all? Darwinism is to me a compound of utility and economy. But by what process of economy or utility did horses get

on the point of their toes? To me, it is evidently the exclusive result of their Maker's will, and that the creation and government of the universe is an absolute despotism in all things."

This facer ought to settle the Darwinians; lest it should not, we subjoin another extract of like tenor:

"I found that a butterfly is an insect ornamented by scales, and that they are divided into day flies and night flies, and again divided into six thousand day or butterflies and sixty thousand night or moth flies, and that butterflies are purely and exclusively (so far as they are butterflies) things made for beauty by an agent or Maker who sees beauty of colors in the night, for there are sixty thousand kinds of night flies and only six thousand day flies. This led me to the undoubted belief that Darwinism applied to butterflies is worse than an error, for it leaves out the most important and essential part of the whole, which is, that the origin of species is the direct exclusive result of an intelligent design."

To the initiated the following will perhaps explain how some of Mr. Coutie's results were obtained:

"As the ways of this argument are so far from the ordinary beaten paths, my intent when writing it was to print in full along with it Newton's four rules of reasoning, pages 384 and 385, *Principia*, to show that this is in full and exact accord with them."

"This design led to a full, careful review of the men, their method and their particular results, that I found that these rules are wholly insufficient for my purpose. They are perfect for his purpose, but insufficient when applied to this paper."

This, so far as we are able to understand it, looks black for Newton.

Among other gems of style and statement, we have the following:

"The history of origin leads us far back into the distant past."

"What this subject learns from this observation of the heavens is that the same rules that govern the atoms."

"The density of the air is the result of its own weight."

The author has also discovered a few less important matters of detail. Among other things two new—what shall we call them; not elements for they are, according to our present notions, compound. The first of

these new somethings is kirs. This is no common mangy kirs, but a new kind of kirs altogether. He or it—for the author says enough about the relations of the atoms to make one careful—is introduced to our notice as follows:

"The most resultant discovery of all is that kirs is a hydrate of nitrogen, having the atomic form N_3HN_3 ."

The second something new is Stuart, which is N_3H , it seems. According to the author this, as well as kirs, is unobserved. We understood that Curtius not many years since discovered a compound having the symbol of Stuart, but this is perhaps a mistake. Carbon has been found to be AN., ice is Aq. and made up of Stuart, Cyanogen and more Stuart. Coke equals kars and A. We are nowhere informed what is meant by A, nor is it easy to see what difference there is between 'combining constituents' and 'constituents' except with the eye of faith. The author explains, however, that "The grand difficulty of the calculation is that the revelations at the end constantly contradict the premises at the beginning."

Everything about this wonderful pamphlet is new, even the spelling is *sui generis*. For example: Flourine, Glucium, Rubedium, Phosphorous, Telerium, Tantalium, Lanthanium, Paladium.

We hope that E. H. Lisk, printer, Troy, N. Y., turned off a large edition of these pamphlets. They will all be needed, and when obtained ought to be carefully preserved as an illustration of the magnificent reach sometimes attained by the American intellect.

EDWARD HART.

NOTES AND NEWS.

BIOLOGY.

THE Tenth Annual Fish Commissioners' Report from Michigan is entirely in the field of fresh-water biology. It is important to mark the rapid development of biological work in the central universities of this

country, and to note that the work carried on by the State is so largely by the coöperation of the biologists of the University. Thus two of the papers of this report are by Professor Jacob Reighard, the first being a study of the development of the wall-eyed Pike, the second a valuable résumé of the whole subject of artificial fertilization. The Bulletin, No. 4, of the Commission, which we receive at the same time, contains a preliminary account of the biological examination of Lake St. Clair during the summer of 1893. This was suggested by the continued decrease in the number of Whitefish, but very wisely the work extended over a broader field. The objects of this examination are stated as follows: "(1) To study carefully and in the broadest possible way the life in the lake. After examining the physical characteristics of the lake, such as the color, transparency and chemistry of the water, a study of this sort should include a determination of the kinds of animals and plants in the lake. Every species should be sought out, carefully described and figured, and a specimen of it preserved. Then the habits of each species should be known, its habitat, its food, its enemies and its parasites. The numbers of animals and plants of each species in a given volume of water should be determined and the variations in these numbers in different parts of the lake and at different seasons of the year. Such a collection of data would form a complete picture of the biology of the lake." The work was under the direction of Professor Reighard, assisted by Dr. Ward, of the University of Nebraska, by Mr. Frank Smith, of the University of Illinois, and by several assistants from the University of Michigan. The materials collected were widely distributed for determination, and the reports are by Dr. Blanchard, of Paris, Dr. E. A. Birge, of the University of Wisconsin, and others. The survey seems to have been carried on with all the thoroughness both